DRAFT

# 60619

Granoblastic Anorthosite

28 grams


*Figure 1: Photo of 60619. NASA S73-20460. Scale in mm/cm.*

## Introduction

60619 is a rake sample collected 70 m west of the Lunar Module. It is a coherent, recrystallized, plagioclase-rich rock with minor glass-splash and a few micrometeorite craters (figure 1). It has not been well studied.

## Petrography

Dowty et al. (1974) and Warner et al. (1976) reported petrographic descriptions of 60619. The granoblastic texture (figure 2) is caused by extensive subsolidus recrystallization. Small anhedral grains of plagioclase have smooth boundaries and meet in triple junctions. The mafic mineral phases occur 1) as small anhderal grains at these triple junctions, 2) as minute inclusions in the plagioclase or 3) as large grains that enclose small plagioclase.

## Mineralogy

***Olivine:*** Olivine is uniform in composition ($Fo_{70}$).

***Pyroxene:*** Pyroxene compositions determined by Dowty et al. (1974a) and Warner et al. (1976) are illustrated in figure 3.

*Figure 2: Thin section photomicrograph of 60619 showing granoblastic texture - mostly plagioclase with minute olivine. Width of field is 4 mm. Crossed nicols. (pictue from Dowty et al. 1974).*

***Plagioclase:*** Plagioclase is $An_{95}$. Hansen et al. (1979) determined the trace element composition of plagioclase in 60619.

***Ilmenite:*** Warner et al. (1976) give an analysis of ilmenite.

***Chromite:*** Dowty et al. (1974a) give an analysis of trace chromite found in 60619.

***Rutile:*** A tiny grain of rutile is reported (Dowty et al. 1974a).

## Chemistry

The only analysis of 60619 is the broad beam analysis of an area on a thin section (Dowty et al. 1974a, Warner et al. 1976).

## Radiogenic age dating

None

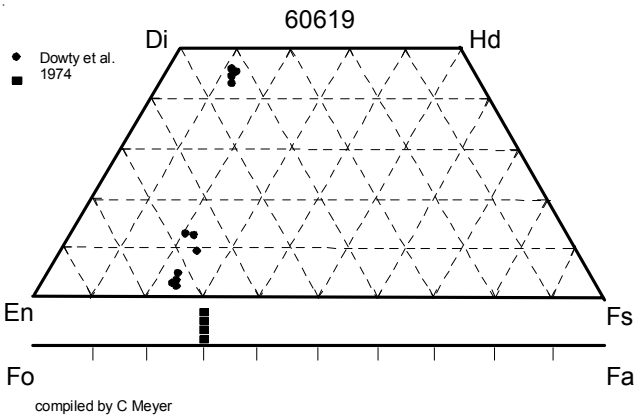



*Figure 3: Pyroxene and olivine composition in 60619 (Warner et al. 1976).*

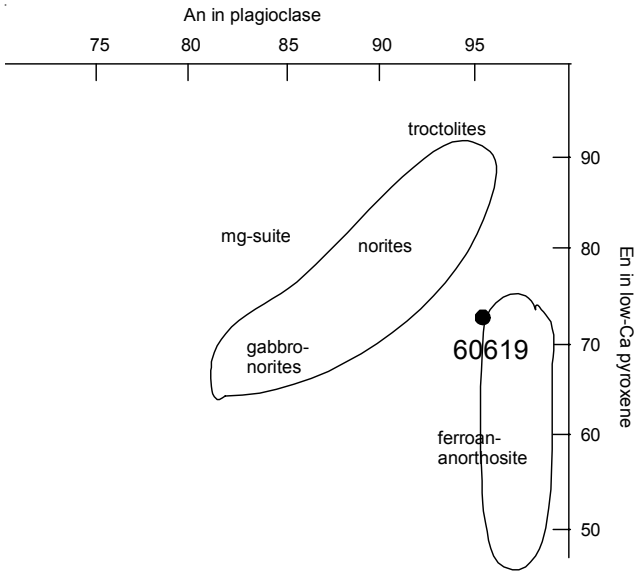
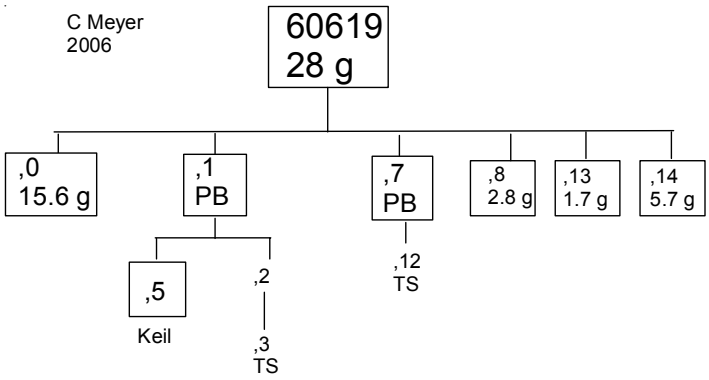



*Figure 4: Pyroxene and plagioclase composition in 60619.*



## Table 1. Chemical composition of 60619.

| | | |
|---|---|---|
| *reference* | Dowty 74a | |
| *weight* | Warner 76 | |
| SiO2 % | 44.6 | (a) |
| TiO2 | 0.06 | (a) |
| Al2O3 | 32.9 | (a) |
| FeO | 1.2 | (a) |
| MnO | 0.01 | (a) |
| MgO | 1.68 | (a) |
| CaO | 17.8 | (a) |
| Na2O | 0.63 | (a) |
| K2O | 0.04 | (a) |
| P2O5 | 0.03 | (a) |
| S % | | |
| *sum* | | |
| | | |
| Sc ppm | | |
| V | | |
| Cr | 68 | (a) |
| Co | | |
| Ni | | |
| Cu | | |
| Zn | | |
| Ga | | |
| Ge ppb | | |
| As | | |
| Se | | |
| Rb | | |
| Sr | | |
| Y | | |
| Zr | | |
| Nb | | |
| Mo | | |
| Ru | | |
| Rh | | |
| Pd ppb | | |
| Ag ppb | | |
| Cd ppb | | |
| In ppb | | |
| Sn ppb | | |
| Sb ppb | | |
| Te ppb | | |
| Cs ppm | | |
| Ba | | |
| La | | |
| Ce | | |
| Pr | | |
| Nd | | |
| Sm | | |
| Eu | | |
| Gd | | |
| Tb | | |
| Dy | | |
| Ho | | |
| Er | | |
| Tm | | |
| Yb | | |
| Lu | | |
| Hf | | |
| Ta | | |
| W ppb | | |
| Re ppb | | |
| Os ppb | | |
| Ir ppb | | |
| Pt ppb | | |
| Au ppb | | |
| Th ppm | | |
| U ppm | | |

*technique: (a) broad beam elec. Probe.*